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wherein at least a portion of the one of the at least two conductor layers that is closest to said microstrip line and faces the microstrip line is omitted;

said microstrip line defines a microstrip line resonator;

at least one of said plurality of dielectric layers, at least one of said at least two grounding conductor layers and said strip line define a strip line resonator; and

a single resonator is defined by said microstrip line resonator and said strip line resonator.

2. A resonator according to Claim 1, wherein said portion of said one of the at least two conductor layers that is omitted is disposed within said multi-layer substrate and is arranged such that said grounding conductor layer disposed on the lower surface of said multilayer substrate faces said microstrip line.

Sub B1
a2

8. A resonator comprising:
a multi-layer substrate having an upper and lower surface, and including at least two conductor layers which include at least two grounding conductor layers and a plurality of dielectric layers, one of the at least two grounding conductor layers being disposed on the lower surface of the multi-layer substrate, and one of the at least two conductor layers that is closest to said microstrip line and faces the microstrip line has an opening formed therein;

a strip line disposed between the at least two grounding conductor layers;
a microstrip line disposed on the upper surface of said multi-layer substrate; and
a through hole formed in said dielectric layers to connect said strip line to said microstrip line;

said microstrip line defines a microstrip line resonator;
at least one of said plurality of dielectric layers, at least one of said at least two grounding conductor layers and said strip line define a strip line resonator; and
a single resonator is defined by said microstrip line resonator and said strip line resonator.

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Sub
B1
A3

14. A voltage controlled oscillator comprising:

a resonator including:

a multi-layer substrate having an upper and lower surface, and including at least two conductor layers which include at least two grounding conductor layers and a plurality of dielectric layers, one of the at least two grounding conductor layers being disposed on the lower surface of the multi-layer substrate;

a strip line disposed between the at least two grounding conductor layers;

a microstrip line disposed on the upper surface of said multi-layer substrate; and

a through hole formed in said dielectric layers to connect said strip line to said microstrip line;

wherein at least a portion of the one of the at least two conductor layers that is closest to said microstrip line and faces the microstrip line is omitted;

said microstrip line defines a microstrip line resonator;

at least one of said plurality of dielectric layers, at least one of said at least two grounding conductor layers and said strip line define a strip line resonator; and

a single resonator is defined by said microstrip line resonator and said strip line resonator; and

a plurality of electronic component elements disposed on the upper surface of the multi-layer substrate and arranged to define a circuit.

a4 Sub B1

16. The voltage controlled oscillator according to claim 14, wherein said portion of said one of the at least two conductor layers that is omitted is disposed within said multi-layer substrate and is arranged such that said grounding conductor layer disposed on the lower surface of said multi-layer substrate faces said microstrip line.